WHAT IS CLAIMED IS:

1. A method for reconstructing a three-dimensional dataset representative of an imaged object, said method comprising:

acquiring views of an object from at least two projection angles with an imaging system including at least one radiation source and at least one detector array to generate a projection dataset of the object;

backprojecting the views across an imaged volume; and

processing the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of images representative of the imaged object.

2. A method in accordance with Claim 1, wherein acquiring views of an object from at least two projection angles with an imaging system comprises acquiring views of an object with one of a computed tomography (CT) detector array, a mammographic detector array, and a chest detector array.

3. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a maximum operator.

4. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a minimum operator.

5. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a median operator according to $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$.

6. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the

backprojected data using a generalized median operator wherein said generalized median operator comprises $f(P_1,...,P_N)=Q_K$ for some fixed value K wherein $1 \leq K \leq N$.

7. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a generalized average operator.

8. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a binary operator.

9. A method in accordance with Claim 1 wherein processing the backprojected data using a non-linear operator comprises processing the backprojected data using a monotonic operator.

10. A method according to Claim 1 further comprising enhancing the generated three-dimensional dataset using unused contrast.

11. A method in accordance with Claim 10, wherein to enhance the generated three-dimensional dataset said method further comprising performing a nonlinear reconstruction using enhanced views.

12. A method in accordance with Claim 11, wherein said method further comprising computing enhanced views from the original views using unused contrast and a contribution count.

13. A method for reconstructing a three-dimensional dataset representative of an imaged object, said method comprising:

acquiring views of an object from at least two projection angles with a medical imaging system including at least one radiation source and at least one detector array to generate projection data of the object, wherein said at least one detector array comprises one of a computed tomography (CT) detector array, a chest detector array and a mammographic detector array.

backprojecting the views across an imaged volume; and

processing the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of medical images representative of the imaged object, wherein said non-linear operator comprises one of a maximum operator, a minimum operator, a generalized average operator, a binary operator, a monotonic operator, a median operator according to $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$, and a generalized median operator according to $f(P_1,...,P_N) = Q_K$ for some fixed value K wherein $1 \leq K \leq N$.

14. A medical imaging system for reconstructing a three-dimensional dataset representative of an imaged object, said medical imaging system comprising:

a detector array;

at least one radiation source; and

a computer coupled to said detector array and radiation source and configured to:

acquire views of an object from at least two projection angles to generate projection data of the object;

backproject the views across an imaged volume; and

process the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of medical images representative of the imaged object.

15. A medical imaging system in accordance with Claim 14 wherein said detector array comprises at least one of a computed tomography (CT) detector array, a chest detector array, and a mammographic detector array.

16. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a maximum operator.

17. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a minimum operator.

18. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a median operator according to $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$.

19. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a generalized median operator according to $f(P_1,...,P_N) = Q_K$ for some fixed value K wherein $1 \leq K \leq N$.

20. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a generalized average operator.

21. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a binary operator.

22. A medical imaging system in accordance with Claim 14 wherein to process the backprojected data using a non-linear operator, said computer further configured to process the backprojected data using a monotonic operator.

23. A medical imaging system in accordance with Claim 14, said computer further configured to enhance the generated three-dimensional dataset using unused contrast.

24. A medical imaging system in accordance with Claim 10, wherein to enhance the generated three-dimensional dataset said computer further configured to perform a nonlinear reconstruction using enhanced views.

25. A medical imaging system in accordance with Claim 24, wherein said computer further configured to compute enhanced views from the original views using unused contrast and a contribution count.

26. A medical imaging system for reconstructing a three-dimensional dataset representative of an imaged object, said medical imaging system comprising:

a detector array, said detector array comprising at least one of a computed tomography (CT) detector array, a chest detector array, and a mammographic detector array;

at least one radiation source; and

a computer coupled to said detector array and radiation source and configured to:

acquire views of an object from at least two projection angles to generate projection data of the object;

backproject the views across the imaged volume; and

process the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of medical images representative of the imaged object, wherein said non-linear operator comprises one of a maximum operator, a minimum operator, a generalized average operator, a binary operator, a monotonic operator, a median operator according to $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$, and

a generalized median operator according to $f(P_1,...,P_N) = Q_K$ for some fixed value K wherein $1 \leq K \leq N$.

27. A computer readable medium encoded with a program executable by a computer for reconstructing a three-dimensional dataset representative of an imaged object, said program configured to instruct the computer to:

acquire views of an object from at least two projection angles to generate projection data of the object;

backproject the views across an imaged volume; and

process the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of medical images representative of the imaged object.

28. A computer readable medium in accordance with Claim 27 wherein to acquire views of an object from at least two projection angles with a medical imaging system, said program further configured to acquire views of an object with at least one of a computed tomography (CT) detector array and a mammographic detector array.

29. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a maximum operator.

30. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a minimum operator.

31. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a median operator according to $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$.

32. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program

further configured to process the backprojected data using a generalized median operator according to $f(P_1,...,P_N)=Q_K$ for some fixed value K wherein $1 \leq K \leq N$.

33. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a generalized average operator.

34. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a binary operator.

35. A computer readable medium in accordance with Claim 27 wherein to process the backprojected data using a non-linear operator, said program further configured to process the backprojected data using a monotonic operator.

36. A computer readable medium in accordance with Claim 27 wherein said program further configured to enhance the generated three-dimensional dataset using unused contrast.

37. A computer readable medium in accordance with Claim 36, wherein to enhance the generated three-dimensional dataset said program further configured to perform a nonlinear reconstruction using enhanced views.

38. A computer readable medium in accordance with Claim 37, wherein said program further configured to compute enhanced views from the original views using unused contrast and a contribution count.

39. A computer readable medium encoded with a program executable by a computer for reconstructing a three-dimensional radiographic image, said program configured to instruct the computer to:

acquire views of an object from at least two projection angles to generate projection data, said program further configured to acquire views of an object

with at least one of a computed tomography (CT) detector array, chest detector array, and a mammographic detector array;

backproject the views across an imaged volume; and

process the backprojected data using a non-linear operator to generate a three-dimensional dataset consisting of a plurality of medical images representative of the imaged object, wherein said non-linear operator comprises one of a maximum operator, a minimum operator, an average operator, a binary operator, a monotonic operator, a median operator, wherein said median operator comprises $f(P_1,...,P_N) = median(P_1,...,P_N) = Q_{\frac{(N+1)}{2}}$, and a generalized median operator according to $f(P_1,...,P_N) = Q_K$ for some fixed value K wherein $1 \leq K \leq N$.